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Michael [US/US]; 5463 Navajo Trail, Pinckney, MI 48169 (US).

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(74) Agents: GAMBURD, Nancy, R. et al.; Gamburd Law Group LLC, 566 West Adams, Suite 350, Chicago, IL 60661 (US).

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(71) Applicant (for all designated States except US): **MOBIUS MICROSYSTEMS, INC.** [US/US]; Grand Park Centre, Suite 1600, 28 West Adams Avenue, Detroit, MI 48226 (US).

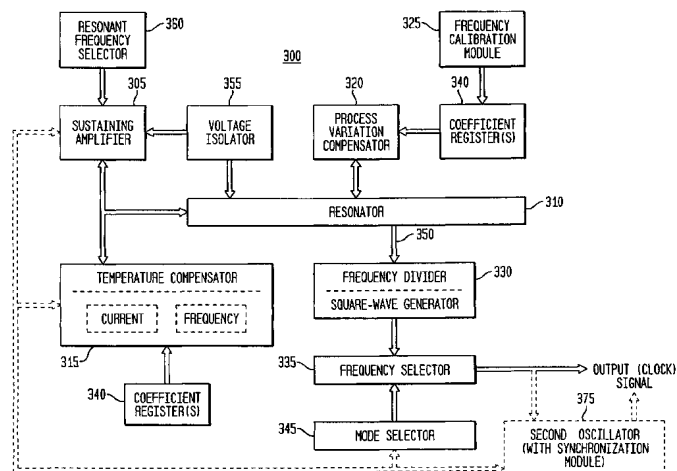
(72) Inventors; and

(75) Inventors/Applicants (for US only): **MCCORQUODALE, Michael, Shannon, D.** [US/US]; 555 Brush Street, Apt. 2105, Detroit, MI 48226 (US). **PERNIA, Scott,**

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(54) Title: TRANSCONDUCTANCE AND CURRENT MODULATION FOR RESONANT FREQUENCY CONTROL AND SELECTION



(57) Abstract: In various embodiments, the invention provides a frequency controller and a temperature compensator for frequency control and selection in a clock generator and/or a timing and frequency reference. The various apparatus embodiments include a resonator adapted to provide a first signal having a resonant frequency; an amplifier; a temperature compensator adapted to modify the resonant frequency in response to temperature; and a process variation compensator adapted to modify the resonant frequency in response to fabrication process variation. In addition, the various embodiments may also include a frequency divider adapted to divide the first signal having the resonant frequency into a plurality of second signals having a corresponding plurality of frequencies substantially equal to or lower than the resonant frequency; and a frequency selector adapted to provide an output signal from the plurality of second signals. The output signal may be provided in any of various forms, such as differential or single-ended, and substantially square-wave or sinusoidal.

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